Paper No. 27

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JIN JING and MICHAEL M. TSO

Appeal No. 2002-1337
Application No. 09/000,635

ON BRIEF

Before KRASS, DIXON and GROSS, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1, 2 and 4-18[1].

The invention is directed to maintaining a cache storage of a network device that services a plurality of client devices capable of downloading objects. The invention seeks to prevent any single client device from essentially monopolizing the cache

[1]The appendix to the principal brief indicates no claim 2 but, rather, claims 1 and 3-18.

storage, thereby promoting a fair distribution of cache resources among the various client devices serviced by the network device.

Representative independent claim 12 is reproduced as follows:

> 12. A cache manager for a network device coupled to a plurality of client devices capable of downloading objects, wherein said cache manager manages a cache storage containing a plurality of cached objects, each of which is associated with at least one client device that downloaded it, said cache manager comprising instructions for determining an amount of cache resource occupied by cached objects associated with each of a plurality of client devices, and removing cached objects from the cache storage to ensure that the amount of cache resource occupied by cached objects associated with any given client device does not exceed a predetermined threshold.

The examiner relies on the following reference:

Orbits et al. (Orbits)	5,237,673	Aug. 17, 1993

Claims 1, 2 and 4-18 stand rejected under 35 U.S.C. §102 (b) as anticipated by Orbits.

Reference is made to the briefs and answer for the respective positions of appellants and the examiner.

OPINION

Under 35 U.S.C. §102 (b), a reference must disclose, explicitly or implicitly, every limitation of the claimed invention. Glaxo Inc. v. Novopharm Ltd., 52 F.3d 1043, 1047, 34 USPQ2d 1565, 1567 (Fed. Cir.), cert. denied, 516 U.S. 988 (1995).

Taking claim 12 as exemplary, since all the claims will stand or fall together, in accordance with appellants' grouping at page 6 of the principal brief, the examiner makes the following observations regarding Orbits.

The examiner identifies CM memory 23 as a storage medium which contains a set of instructions for execution by a network device, the network device being processor 21, within coupled memory CPU modules 11a-11b. The examiner says that this "network device" is coupled to a cache storage including a plurality of cached objects, wherein each of the cached objects is associated with at least one of a plurality of client devices, identifying processor 21 within each coupled memory CPU module as accessing both local and remote coupled memory 23 within another coupled memory CPU module. The examiner points to column 3, lines 3-5, of Orbits as a disclosure of determining an amount of cache resource occupied by cached objects associated with at least one client device that downloaded the cached object. The examiner also refers to column 5, lines 39-46 and column 6, lines 19-48, for a teaching of the most frequently accessed pages of data being physically closest to the processor using the data. Column 3, lines 5-9, is said to teach the removal of a number of cache objects from the cached storage to ensure that the amount of cache resource occupied by cached objects associated with any given client device does not exceed a predetermined threshold.

Appellants argue that Orbits is not concerned with maintaining a cache storage in a network device coupled to a plurality of client devices, as is the instant invention but, rather, Orbits is directed only to managing coupled memory that is accessible by a plurality of CPUs.

In particular, appellants point out that the coupled memory, CM, in Orbits is not a cache storage, as claimed, since Orbits shows two cache memories separate and apart from the managed coupled memory.

More specifically, appellants point to the claim language requiring that the plurality of client devices are "capable of downloading objects" and that each cached object "is associated with at least one client device that downloaded it," arguing that it is clear that the individual CPUs in Orbits are not "client devices," as that term is used in the instant claims and as would be understood by artisans.

Still further, argue appellants, even if one could equate the coupled memory and CPUs of Orbits to the cache storage and client devices of the instant claimed invention, which appellants do not concede, Orbits would still not anticipate the instant claimed invention because "the reference lacks any teaching of determining an amount of the CM occupied by objects associated with each of a plurality of CPUs, or removing objects from the cache if that amount exceeds a predetermined threshold" (principal

brief, page 9). Instead, Orbits merely evaluates the amount of free space in the CM so that when the amount of free space is below a threshold, a predetermined number of pages are placed on a list of pages to be replaced as new data is added to the CM.

We agree with appellants.

It does appear to us that Orbits is unconcerned with networks and downloading of objects from a network to a client device, and so would be inapplicable to the instant claimed invention. But, even if we agreed with the examiner's interpretation of Orbits' CPUs as client devices that download objects (column 5, lines 21-29, of Orbits does indicate that the CPU associated with a CM region may access data either in that CM region or from a remote CM region through global interconnect 12 so one might call the CPU a "client device" which is capable of "downloading" data, or an object, from a remote location), it is very clear to us that Orbitz does not disclose the removal of cached objects to ensure that the amount of cache resource occupied by cached objects associated with any given client device does not exceed a predetermined threshold, as claimed. Instead, Orbits discloses, at column 12, lines 47-53, that

> At prescribed intervals, the free memory of each coupled memory region is evaluated to determine if it is below a threshold. If below the threshold, a predetermined number of pages of the coupled memory region are scanned. Infrequently used pages are placed on a list of pages that can be replaced with pages stored in the storage medium.

There is nothing in this teaching that indicates that Orbits is interested in the amount of cache space "associated with" any given CPU, or client device, and in making a decision to remove cached objects from cache storage in order to ensure that the amount of cache resource occupied by cached objects "associated with" any given client device (or CPU) does not exceed a predetermined threshold, as claimed. Instead, the "predetermined threshold" in Orbits relates to the amount of free memory space of each coupled memory (CM) region and, if the amount of free space is below the threshold, then a number of pages of the CM region are scanned and those pages used less often are placed on a list of pages which can be replaced with other pages stored in the storage medium. As explained by appellants, at page 6 of the reply brief,

> ...Orbits is concerned only with the overall amount of free space in the coupled memory and how frequently particular pages are accessed. Unlike the claimed invention, Orbits is not concerned with how the objects came to be in the coupled memory (i.e., the client devices that downloaded them).

We also agree with appellants' comment, at page 6 of the reply brief, that

> Orbits discloses that each of the coupled memories is associated with a particular CPU to which it is directly coupled, but it says nothing about any association between CPUs and the pages stored in the coupled memories.... The mere fact that multiple CPUs can access objects in a given coupled memory does not support the conclusion that objects in a coupled memory are somehow "associated" with a CPU that retrieved the object.

Accordingly, since an important claim limitation does not appear to have been disclosed by Orbits, we will not sustain the rejection of the claims under 35 U.S.C. §102 (b).

The examiner's decision is reversed.

REVERSED

ERROL A. KRASS Administrative Patent Judge	)
JOSEPH L. DIXON Administrative Patent Judge	) BOARD OF PATENT) APPEALS) AND) INTERFERENCES
ANITA PELLMAN GROSS Administrative Patent Judge	)

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